

REMARKS

By the present amendment, claims 1 to 3 are pending in the application.

Claim 1 is the only independent claim.

Support For Claim Amendment

In claim 1, the new claim limitation --Ti: 0.003 to 0.20%-- appeared in prior dependent claim 2.

In claim 1, support for the ferrite --having a grain diameter of 2 μ m or more -- may be found in the specification, e.g., at page 10, lines 21 to 25.

§103

Claims 1 to 3 were rejected under 35 U.S.C. §103(a) as being unpatentable over Japan No. 11-323480 to Yoshitaka et al.

Claims 1 to 3 were rejected under 35 U.S.C. §103(a) as being unpatentable over EP 0 974 677 to Kawano et al.

These rejections, as applied to the amended claims, are respectfully traversed.

Patentability

Japan No. 11-323480 (“the ‘480 patent”)

The technology disclosed in the ‘480 patent relates to a steel sheet containing a fine structure, where the steel sheet contains C: 0.05 - 0.6%, Mn: 1 - 4%, Si: 0 - 3%, Al: 0.01 - 2.5%, Cr: 0 - 2.5%, Mo: 0 - 2.5%, and does not contain Ti.

However, the present invention contains Ti: 0.003 - 0.20% as an indispensable element to cause the precipitation of fine TiC and enable higher strength.

Regarding a production process, hot rolling of the '480 patent is carried out in a temperature range of the 2 phase region; α (ferrite) + γ (austenite) region. For steel No. 7g in the Example, hot rolling is finished at a temperature of 650°C $\{640^{\circ}\text{C} + 660\}/2$, i.e., below Ar₃. On the other hand, hot rolling in the present invention is carried out above Ar₃ transformation temperature ($=660^{\circ}\text{C}$; austenite region). If the hot rolling is finished below Ar₃ temperature, elongation remarkably deteriorates, as discussed in the specification, e.g., at page 12, lines 5 to 10.

Therefore, the '480 patent is very different from the present invention.

EP 0 974 677 ("the '677 patent")

The technology disclosed in the '677 patent relates to a high strength steel sheet highly resistant to dynamic deformation and excellent in workability, where the low S and high Al steel sheet contains Al: 0.15 - 2.0%. The '677 patent contains Ti of less than 0.3% to promote a growth of ferrite grains as an optional element. On the other hand, the present invention contains Ti: 0.003 - 0.020% as an indispensable element to cause the precipitation of fine TiC and enable higher strength. Further, the C content in Examples of the '677 patent mostly exceed 0.08% (upper limit of the C content of the present invention).

Therefore, the '677 patent is very different from the present invention.


It is therefore submitted that amended independent claim 1, and claims 2 and 3 dependent thereon, are patentable over Japan No. 11-323480 to Yoshitaka et al and/or EP 0 974 677 to Kawano et al.

CONCLUSION

It is submitted that in view of the present amendment and foregoing remarks, the application is now in condition for allowance. It is therefore respectfully requested that the application, as amended, be allowed and passed for issue.

Respectfully submitted,

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